GEOLOGICAL HAZARDS

LANDSLIDES

The term landslide includes a wide range of ground movement, such as rock falls, deep failure of slopes, and shallow debris flows. Although gravity acting on an over-steepened slope is the primary reason for a landslide, there are other contributing factors:

- Erosion by rivers, glaciers, or ocean waves create oversteepened slopes;
- Rock and soil slopes are weakened through saturation by snowmelt or heavy rains;
- Earthquakes create stresses that make weak slopes fail;
- Earthquakes of magnitude 4.0 and greater have been known to trigger landslides;
- Volcanic eruptions produce loose ash deposits, heavy rain, and debris flows; and
- Excess weight from accumulation of rain or snow, stockpiling of rock or ore from waste piles or from man-made structures may induce weak slopes to fail.

Landslides constitute a major geologic hazard because they are widespread, occurring in all 50 states, and cause $1 to 2 billion in damages and more than 25 fatalities, on average, each year. Landslides pose serious threats to highways and to structures that support fisheries, tourism, timber harvesting, mining, and energy production, as well as general transportation. Landslides commonly happen concurrently with other major natural disasters such as earthquakes and floods, which exacerbate relief and reconstruction efforts. Expanded development and other land uses have increased the incidence of landslide disasters.

Steep slopes, present throughout Nashville area, specifically in south-central Davidson and north-central Williamson Counties, have the potential to be unstable. Landslides have occurred in this area due to construction-altered colluvium soils on steep slopes adjacent to the Highland Rim escarpment. Colluvium soils are derived from the weathering and erosion of the siliceous Fort Payne Formation, and are composed chiefly of silt- to clay-sized fragments of silica with some fragments ranging up to boulder size.

Developments on steeper slopes in recent years have increased the number of landslides and the potential for landsliding in areas around Nashville, especially in the Bellevue area. Most recent landslide incidents have occurred on Dellrose soils at the base of the Fort Payne-Chattanooga slopes.

Figure 4-10 presents evidence of a landslide that occurred at an apartment complex along Edmondson Pike. The slides average about 200 feet in width, 150 feet in length, and have steep surfaces on the undisturbed ground at the upper edge of the landslide ranging from about 3 feet to 24 feet. These slides are significant because they occurred in residential subdivisions with resulting financial loss to many property owners. Damage ranged from minor cracks in retaining walls and foundations to major structural failure of residences. Roadways and driveways were crumpled, dislocated, or cracked.

Figure 4-10. Evidence of Landslides

Past Occurrences

Several landslides occurred in Nashville in the early 1970s. In particular, many landslides occurred in 1975, partially because of heavy rainfall for the year. Approximately 40 slides were visited after the rains of March 11-13, 1975. One special problem was created in the case of a Tennessee Valley Authority power transmission line tower located adjacent to one of the slides. The upper scarp of a slide that occurred March 11, 1975 (one occurred in the same location in 1974) was only 30 feet downhill from the lower legs of the tower. Within the following month, transverse cracks and scarps were forming all around the tower, causing the tower legs to buckle, the base was moved outward and downward, where the tower was tilting uphill. The tower has since been removed from the site.

During the construction of U.S. Highway 70 across Nine Mile Hill, fill failure over colluvium caused continuing problems. In 1973, there was subsequent collapse of deeply weathered Fort Payne and Chattanooga material onto the roadway at the same time.

Old alluvium in a cut on Interstate Highway 40 just northeast of the U.S. Highway 70 South interchange failed, requiring construction of a reinforced retaining wall. Failure of the same material at a service station at this intersection required similar construction.

Landslide events are presented in Figure 4-11 and Appendix B.

Likelihood of Future Occurrences

Although the physical cause of many landslides cannot be removed, geologic investigations, good engineering practices, and effective enforcement of land use management regulations can reduce landslide hazards.

FIGURE 4-11. – Insert map of landslide locations

D R A F T

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D R A F T

SINKHOLES

Karst is a distinctive topography in which the landscape is shaped by the dissolving action of water on carbonate bedrock (usually limestone, dolomite, or marble). Davidson County is characterized by gently-folded and flat-lying carbonate rocks, indurated limestone, and dolomite that has not been strongly deformed (see Figure 4-13, Soil type GC). Dissolution in this region may produce solution, collapse, and cover-collapse sinkholes.

Solution sinkholes form as the limestone dissolves, creating sunken areas in the land surface. Collapse sinkholes form when caves collapse and suddenly drop a portion of the land surface above. Damage to buildings commonly results from collapse of soil and/or rock material into an open void space near or beneath man-made structures (see Figure 4-12).

Ground subsidence into even a small opening may be very costly if a structure sits on the overlying surface. Sinkhole collapses are often unpredicted and sudden, although they occur more frequently after heavy rainfall. Heavy rainfalls increase the soils' weight and decreases its strength and stability. Construction can also trigger collapses by directing runoff into a vulnerable area, or weakening the cover of an incipient collapse. Finally, lowering of the water table by a nearby well or from quarry pumping can also trigger collapse when the buoyant effect of groundwater is removed.

Figure 4-12. Sinkhole Collapse

Within Metropolitan Nashville-Davidson County, areas susceptible to sinkhole formations have been noted adjacent to J. Percy Priest Lake.

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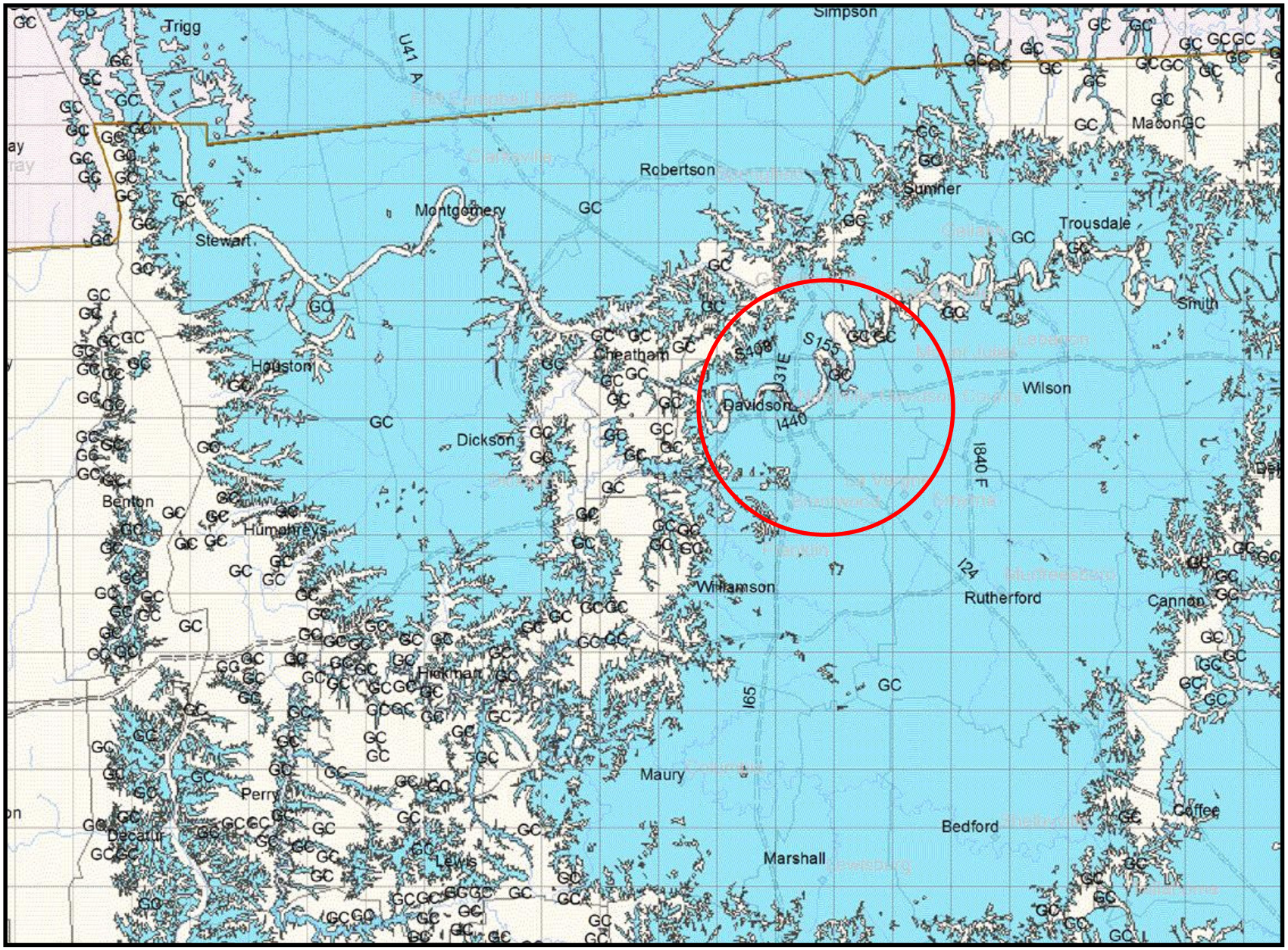

Figure 4-13. Karst Topography of Tennessee

INFESTATIONS

West Nile virus (WNV) is one of several mosquito-borne viruses in the United States that can infect people. The virus exists in nature primarily through a transmission cycle involving certain species of mosquitoes and birds. Mosquitoes become infected with WNV when they feed on infected birds.

WNV first struck the northern hemisphere in Queens, N.Y., in 1999 and killed four people. The disease spread from New York to the West Coast in three years. By 2003, all 50 states were warning of an outbreak.

Positive cases of West Nile Virus in Davidson County were first reported in 2002. Since that time, positive cases in humans, horses, and birds have been reported each year. The figure below presents human case data from 2003.

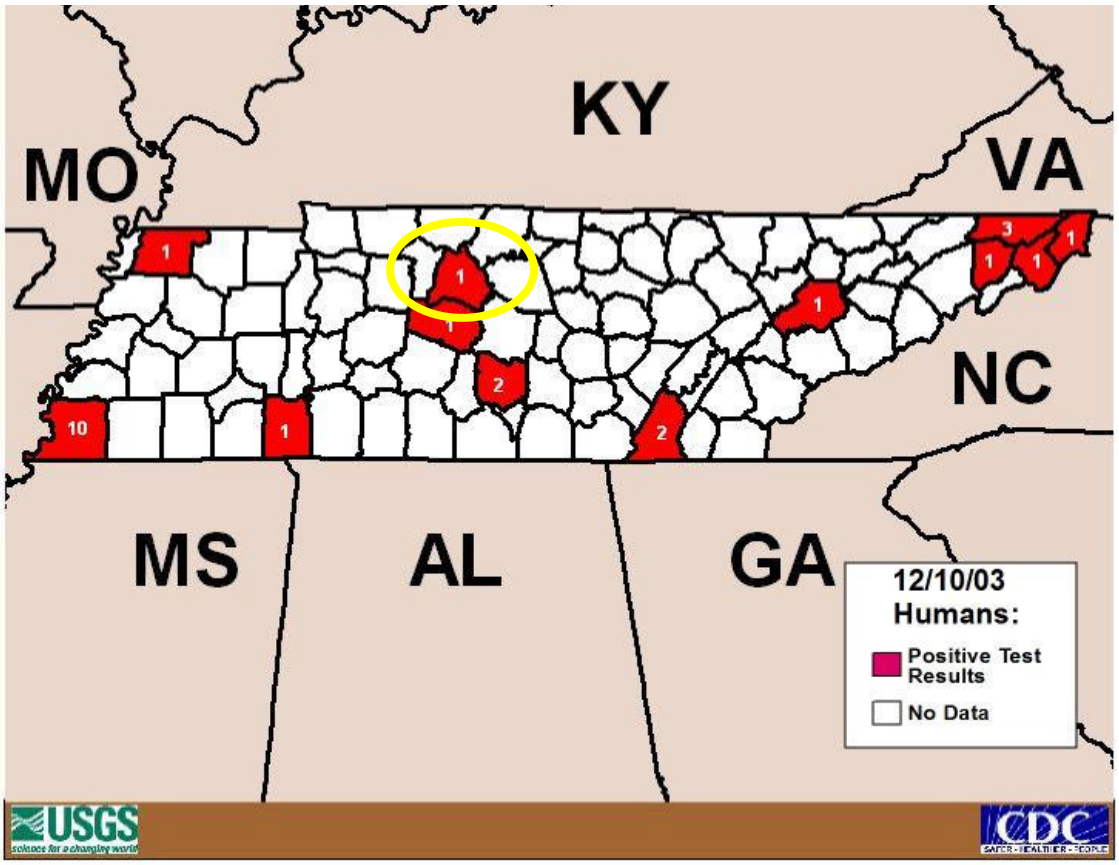

Figure 4-14. Human Cases Reported in 2003.

Past Occurrences

Positive cases of West Nile Virus in Davidson County are presented in Appendix B.

Likelihood of Future Occurrences

The fifth annual West Nile Virus conference was held in Denver, Colorado in February 2004. Conclusions of the conference include:

- Widespread West Nile virus activity exists over most of the continental United States;
- At least 225 species of birds have been infected. Corvids are the most commonly reported positive bird;
- At least 49 species of mosquitoes have been infected. *Culex* mosquitoes are the most commonly reported positive mosquito;
- WNV-positive bird collections and WNV-positive mosquito collections precede the onset of human cases in most counties;
- Human cases have been reported in all states except Maine, Oregon, and Washington;
- Neuroinvasive disease and high mortality is the most common among people over 60 years of age;
- There is an impressive westward movement of most intense WNV transmission;
- No currently approved and effective vaccine and no currently approved and effective antivirals exists; and
- Mosquito control reduces the WNV risk of human infection.

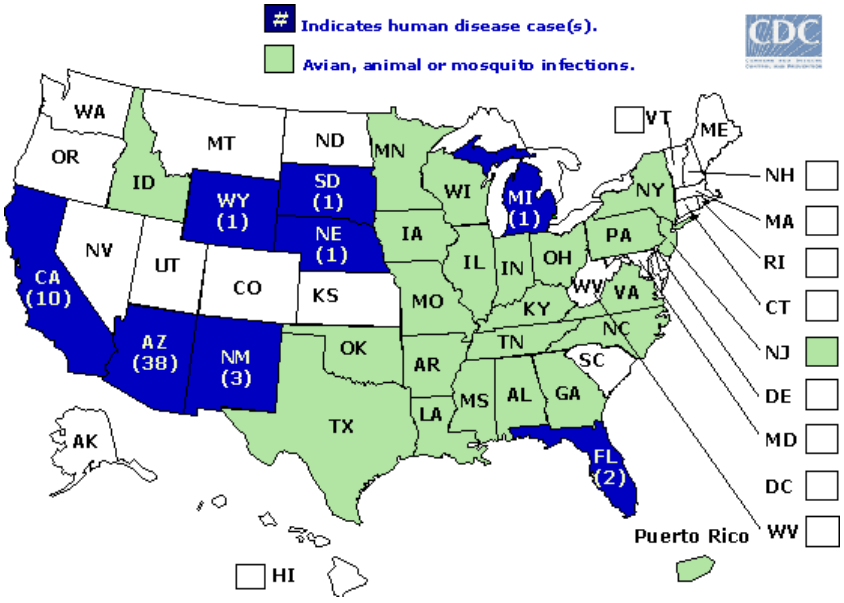

Figure 4-15. 2004 West Nile Activity within the United States
(Courtesy of the Centers for Disease Control and Prevention)

WNV is seemingly at its worst during a state's second year of exposure. If this continues to hold true, Nashville-Davidson County may be past the peak period, while still remaining susceptible.

MANMADE HAZARDS

For the purpose of this plan, "man-made hazards" are technological hazards and terrorism. These are distinguished from natural hazards in that they originate from human activity. The term "technological hazards" refers to the origins of incidents that can arise from human activities such as the manufacture, transportation, storage, and use of hazardous materials.

The term "terrorism" refers to intentional, criminal and malicious acts. Terrorism is officially defined in the Code of Federal Regulations as "...the unlawful use of force or violence against persons or property to intimidate or coerce a Government, the civilian population, or any segment thereof, in furtherance of political or social objectives. For the purposes of mitigation planning, "terrorism" refers to the use of Weapons of Mass Destruction (WMD), including biological, chemical, nuclear, and radiological weapons; arson, incendiary, explosive, and armed attacks; industrial sabotage and intentional hazardous materials releases; and "cyberterrorism."

Mitigation planning efforts for manmade hazards have been completed by OEM and are presented in the Comprehensive Emergency Management Plan, November 2003.

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D R A F T

SEVERE WEATHER

DROUGHT

A drought is a period of drier-than-normal conditions that results in water-related problems. Precipitation (rain or snow) falls in uneven patterns across the country. The amount of precipitation at a particular location varies from year to year but, over a period of years, the average amount is fairly constant. The average monthly precipitation for Nashville is presented in the table below.

Table 4-19. Precipitation Summary (inches)
1948-2003 Southeast Regional Climate Center

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Nashville International Airport	4.33	4.18	5.01	4.05	4.76	4.04	3.78	3.20	3.41	2.68	3.98	4.48	47.90
Old Hickory Dam	3.81	4.32	4.92	3.93	4.79	4.04	3.59	3.05	3.49	2.76	4.06	4.80	47.55

DRAFT

When no rain or only a very small amount of rain falls, soils can dry out and plants can die. When rainfall is less than normal for several weeks, months, or years, the flow of streams and rivers declines and the water levels in lakes, reservoirs, and wells fall. If dry weather persists and water-supply problems develop, the dry period can become a drought. Lower river levels can also cause transportation interruptions on navigable streams.

A common indicator of drought is the Palmer Drought Severity Index (PDSI). The PDSI is a soil moisture algorithm calibrated for relatively homogeneous regions. It is used by many U.S. government agencies and states to trigger drought relief programs. It was also the first comprehensive drought index developed in the United States. The classifications of the PDSI are presented in the table below.

Table 4-20. Palmer Classifications

Palmer Classifications	
4.0 or more	extremely wet
3.0 to 3.99	very wet
2.0 to 2.99	moderately wet
1.0 to 1.99	slightly wet
0.5 to 0.99	incipient wet spell
0.49 to -0.49	near normal
-0.5 to -0.99	incipient dry spell
-1.0 to -1.99	mild drought
-2.0 to -2.99	moderate drought
-3.0 to -3.99	severe drought
-4.0 or less	extreme drought

The PDSI indicates that for the period of 1895 through 1995 the central portion of Tennessee was in a severe to extreme drought 5 to 10 percent of the time. During periods of drought, the Governor has called for a ban of open burning in an effort to reduce the risk of wildfire.

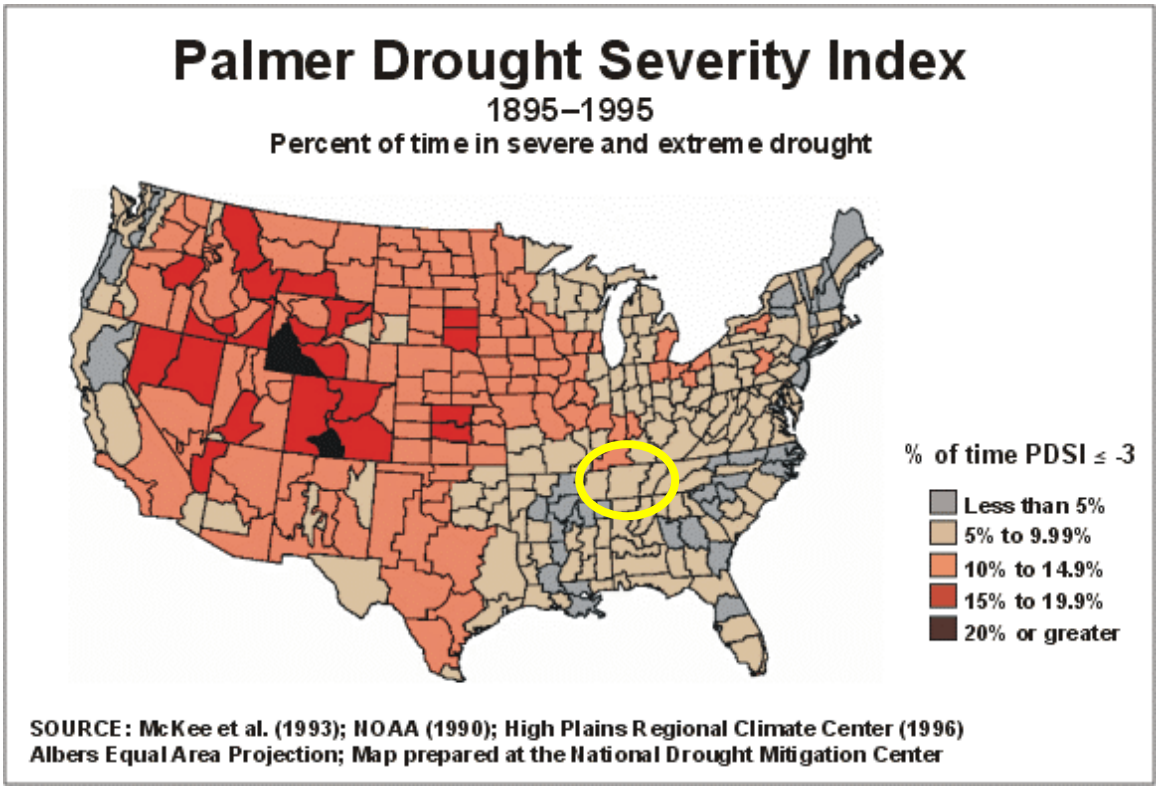

Figure 4-16. Palmer Drought Severity Index

The beginning of a drought is difficult to determine. Several weeks, months, or even years may pass before people recognize that a drought is occurring. The end of a drought can occur as gradually as it began. Dry periods can last for 10 years or more. The first evidence of drought usually is seen in records of rainfall. Within a short period of time, the amount of moisture in soils can begin to decrease. The effects of a drought on flow in streams and rivers or on water levels in lakes and reservoirs may not be noticed for several weeks or months. Water levels in wells may not reflect a shortage of rainfall for a year or more after a drought begins.

Past Occurrences

There have been 16 recorded droughts encompassing the Nashville-Davidson County area since 1797. All events are presented in Appendix B.

Likelihood of Future Occurrences

The Climate Prediction Center (CPC) of the National Weather Service, together with the United States Department of Agriculture, the National Drought Mitigation Center in Lincoln, Nebraska, and NOAA's National Climatic Data Center, issues a weekly drought assessment for the United States. This assessment provides a consolidated depiction of national drought conditions based on a combination of drought indicators and field reports. The CPC also issues a Seasonal United States Drought Outlook each month in conjunction with the weekly release of the long-lead temperature and precipitation outlooks near the middle of the month.

The current seasonal outlook for the United States is presented in Figure 4-17 below. The Nashville-Davidson County area is not likely to be entering a period of drought in the near future.

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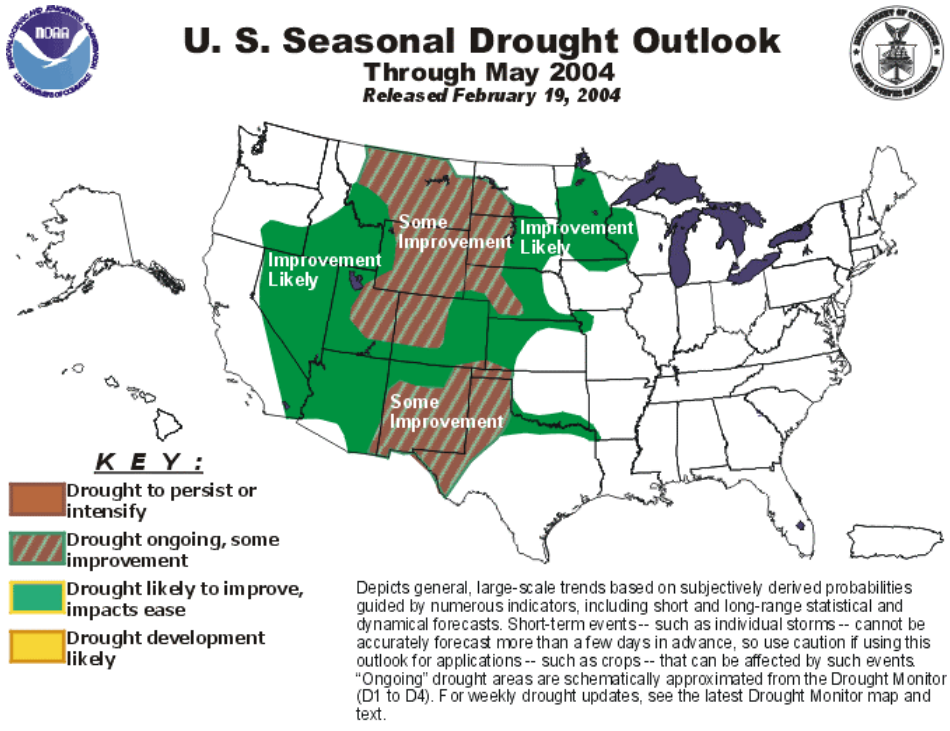


Figure 4-17. U.S. Seasonal Drought Outlook

WILDFIRES

Heavily wooded or forested areas cover only a small portion or Davidson County's total land area. However, when the conditions are right, these areas become vulnerable to devastating wildfires. Also, in the last few decades, the risks associated with Davidson County's wildfire hazard have increased dramatically due to the increase in urban development in and around forested areas.

Generally, there are three major factors that sustain wildfires and allow for predictions of a given area's potential to burn. These factors include:

- Fuel;
- Topography; and
- Weather.

Fuel is the material that feeds a fire and is a key factor in wildfire behavior. Fuel is generally classified by type and by volume. Fuels sources are diverse and include everything from dead tree needles, twigs, and branches to dead standing trees, live trees, brush, and cured grasses. Man-made structures and other associated combustibles are also to be considered as a fuel source. The type of prevalent fuel directly influences the behavior of wildfire. Light fuels such as grasses burn quickly and serve as a catalyst for spreading wildfires.

An area's topography (terrain and land slopes) affect its susceptibility to wildfire spread. Fire intensities and rates of spread increase as slope increases due to the tendency of heat from a fire to rise via convection. The natural arrangement of vegetation throughout a hillside can also contribute to increased fire activity on slopes

Weather components such as temperature, relative humidity, wind, and lightning also affect the potential for wildfire. High temperatures and low relative humidity dry out the fuels that feed the wildfire creating a situation where fuel will more readily ignite and burn more intensely. Wind is the most treacherous weather factor. The issue of drought conditions contributes to concerns about wildfire vulnerability.

The National Weather Service Fire Weather Program emerged in response to a need for weather support to large and dangerous wildfires. This service is provided to federal and state land management agencies for the prevention, suppression, and management of forest and rangeland fires. The National Weather Service Forecast Office in Nashville provides year-round fire weather forecasts for most of Middle Tennessee. Routine fire weather forecasts are issued daily for Tennessee Division of Forestry Districts 4 and 5 (See Figure 4-18).

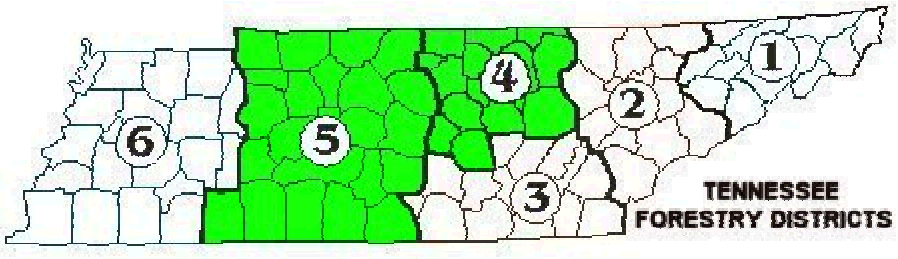


Figure 4-18. Tennessee Fire Districts

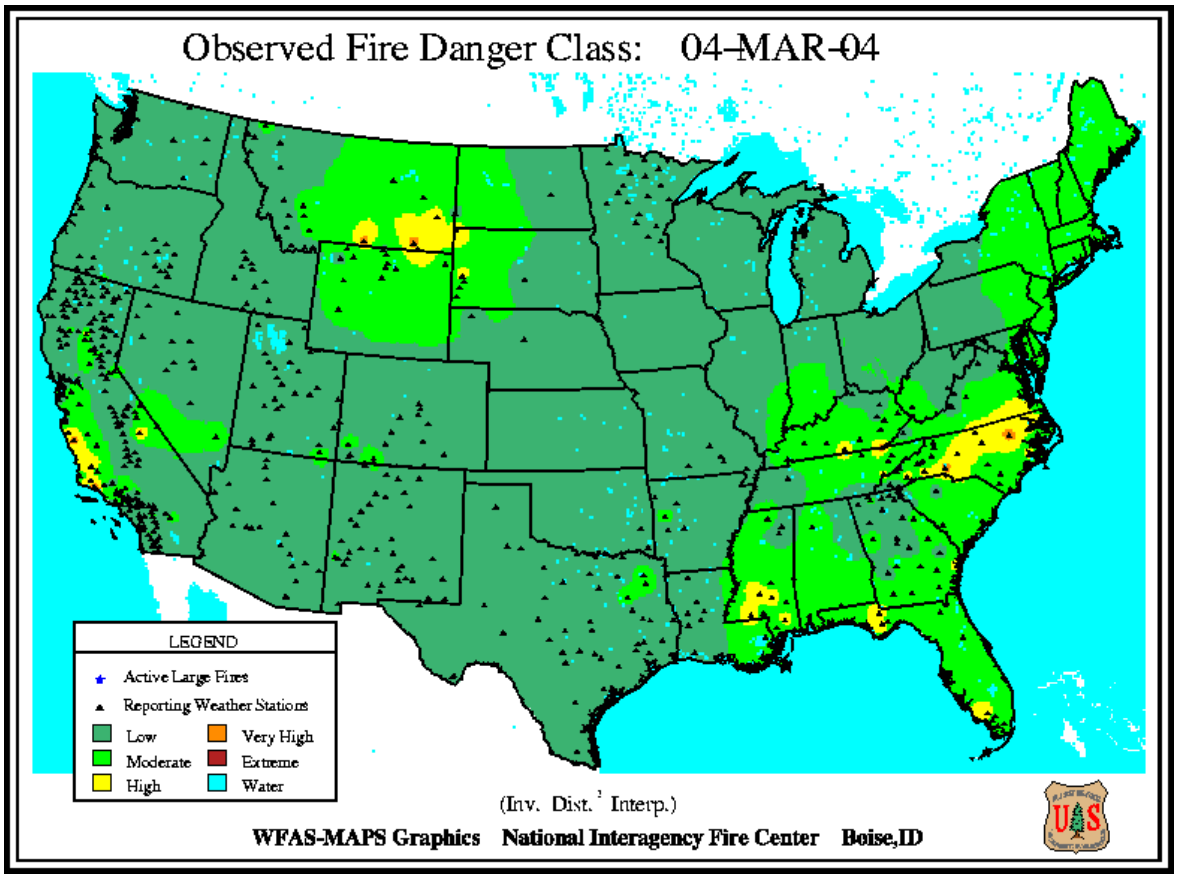
Past Occurrences

There have been 18 recorded wildfire events in the State of Tennessee since 1916. Information about these events is presented in Appendix B.

Likelihood of Future Occurrences

The current US Forest Service forecasts a **moderate** fire danger potential for Nashville.

Figure 4-19. Observed Fire Danger Class



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D R A F T

EXTREME TEMPERATURES

Extreme temperature events, both hot and cold, can have severe impacts on natural ecosystems, agriculture and other economic sectors, and human health and mortality. The normal monthly temperatures for Nashville are presented in the table and figure below.

Table 4-21. Temperature Summary (°F)
1971-2000 National Climatic Data Center

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Nashville International Airport	36.8	41.3	50.1	58.5	67.1	75.1	79.1	77.9	71.3	59.9	49.3	40.5	58.9

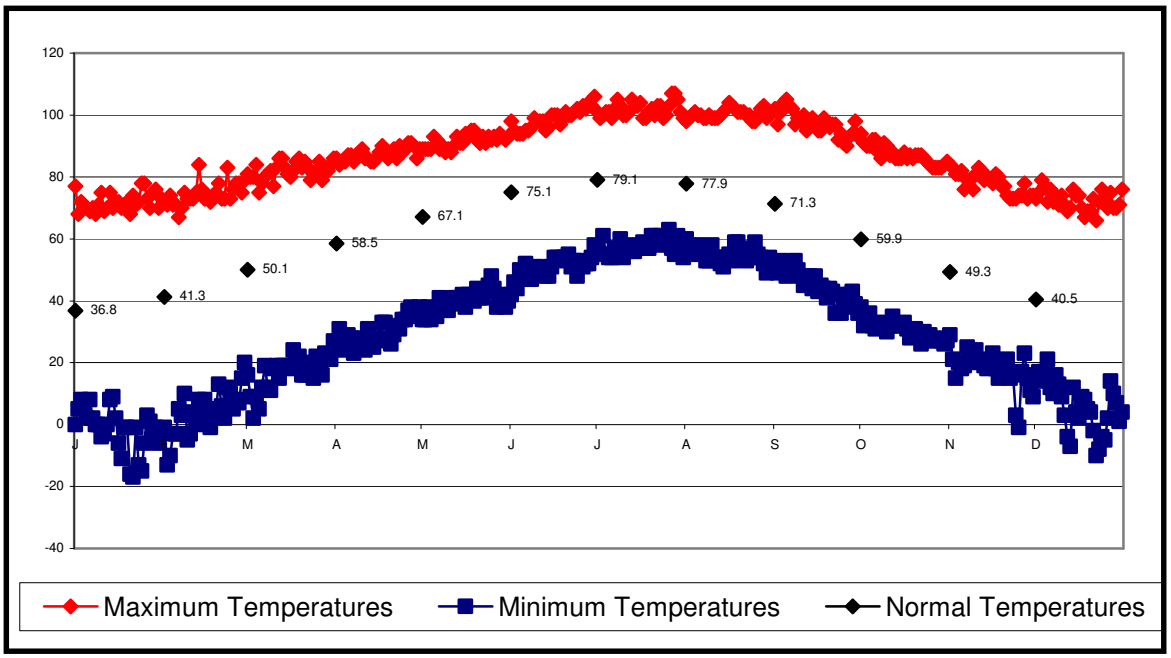

Figure 4-20. Normal Monthly Temperatures

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High Temperatures

Temperatures that remain 10 degrees or more above the average high temperature for the region and last for several weeks are defined as extreme heat by FEMA. Humid or muggy conditions, which add to the discomfort of high temperatures, occur when high atmospheric pressure traps damp air near the ground.

In an effort to alert the public to the hazards of prolonged heat and humidity episodes, the National Weather Service devised the "heat index". The heat index is an accurate measure of how hot it feels to an individual when the affects of humidity are added to high temperature. Table 4-22 presents heat index values and their potential physical effects.

The National Weather Service will issue a *Heat Advisory* for Nashville-Davidson County when daytime heat indices are at or above 105°F and nighttime heat indices are at or above 80°F. An *Excessive Heat Warning* is issued when the heat index equals or exceeds 115°F for three hours or longer with a minimum heat index of at least 80°F during a 24-hour period. An excessive heat advisory is also issued when heat advisory conditions persist for at least 3 days. In either of these scenarios, the heat becomes dangerous for a large portion of the population.

Table 4-22. Heat Index Values and Effects

Heat Index Values (Combination of Heat and Humidity)	Heat Index Effects
80 to 90 degrees F	Fatigue possible with prolonged exposure and/or physical activity.
90 to 105 degrees F	Sunstroke, heat cramps, and heat exhaustion possible with prolonged exposure and or physical activity.
105 to 130 degrees F	Sunstroke, heat cramps or heat exhaustion likely, and heatstroke possible with prolonged exposure and/or physical activity.
130 degrees and higher F	Heatstroke/sunstroke highly likely with continued exposure.

Cold Temperatures

The National Weather Service will issue a Wind Chill Advisory for Nashville-Davidson County when wind-chill temperatures are expected to reach –4°F to –20°F.

In 2001, NWS implemented an updated Wind Chill Temperature (WCT) index. This index was developed by the National Weather Service to describe the relative discomfort/danger resulting from the combination of wind and temperature. Wind chill is based on the rate of heat loss from exposed skin caused by wind and cold. As the wind increases, it draws heat from the body, driving down skin temperature and eventually the internal body temperature.

Specifically, the new WCT index:

- Calculates wind speed at an average height of five feet (typical height of an adult human face) based on readings from the national standard height of 33 feet (10m);
- Is based on a human face model;
- Incorporates modern heat transfer theory (heat loss from the body to its surroundings, during cold and breezy/windy days);
- Lowers the calm wind threshold to 3 mph;

- Uses a consistent standard for skin tissue resistance; and
- Assumes no impact from the sun (i.e., clear night sky).

Past Occurrences

There have been 110 recorded extreme temperature events in Davidson County since 1816. These events are presented in Appendix B.

Likelihood of Future Occurrences

On average, these events have occurred once every 0.5 years, suggesting a similar recurrence period.

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D R A F T

THUNDERSTORMS / HIGH WIND

Thunderstorms are defined as localized storms, always accompanied by lightning, and often having strong wind gusts, heavy rain and sometimes hail or tornadoes. Thunderstorms can produce a strong out-rush of wind known as a down-burst, or straight-line winds which may exceed 120 mph. These storms can overturn mobile homes, tear roofs off of houses and topple trees.

Approximately 10% of the thunderstorms that occur each year in the United States are classified as severe. A thunderstorm is classified as severe when it contains one or more of the following phenomena:

- Hail measuring ¾ inch or greater;
- Winds gusting in excess of 50 knots (57.5 mph); or
- A tornado.

A *severe thunderstorm watch* is issued by the National Weather Service when the weather conditions are such that a severe thunderstorm is likely to develop. This is the time to locate a safe place in the home and to watch the sky and listen to the radio or television for more information.

A *severe thunderstorm warning* is issued when a severe thunderstorm has been sighted or indicated by weather radar. At this point, the danger is very serious and it is time to go to a safe place, turn on a battery-operated radio or television, and wait for the "all clear" from authorities.

Lightning

Lightning is defined as any and all of the various forms of visible electrical discharge caused by thunderstorms.

Cloud-to-ground lightning can kill or injure people by direct or indirect means. The lightning current can branch off to a person from a tree, fence, pole, or other tall object.

Similarly, objects can be directly struck and this impact may result in an explosion, fire, or total destruction. Or, the damage may be indirect when the current passes through or near it. Sometimes, current may enter a building and transfer through wires or plumbing, and damaging everything in its path. In urban areas, lightening may strike a pole or tree and the current then travels to several nearby houses and other structures and enters them through wiring or plumbing.

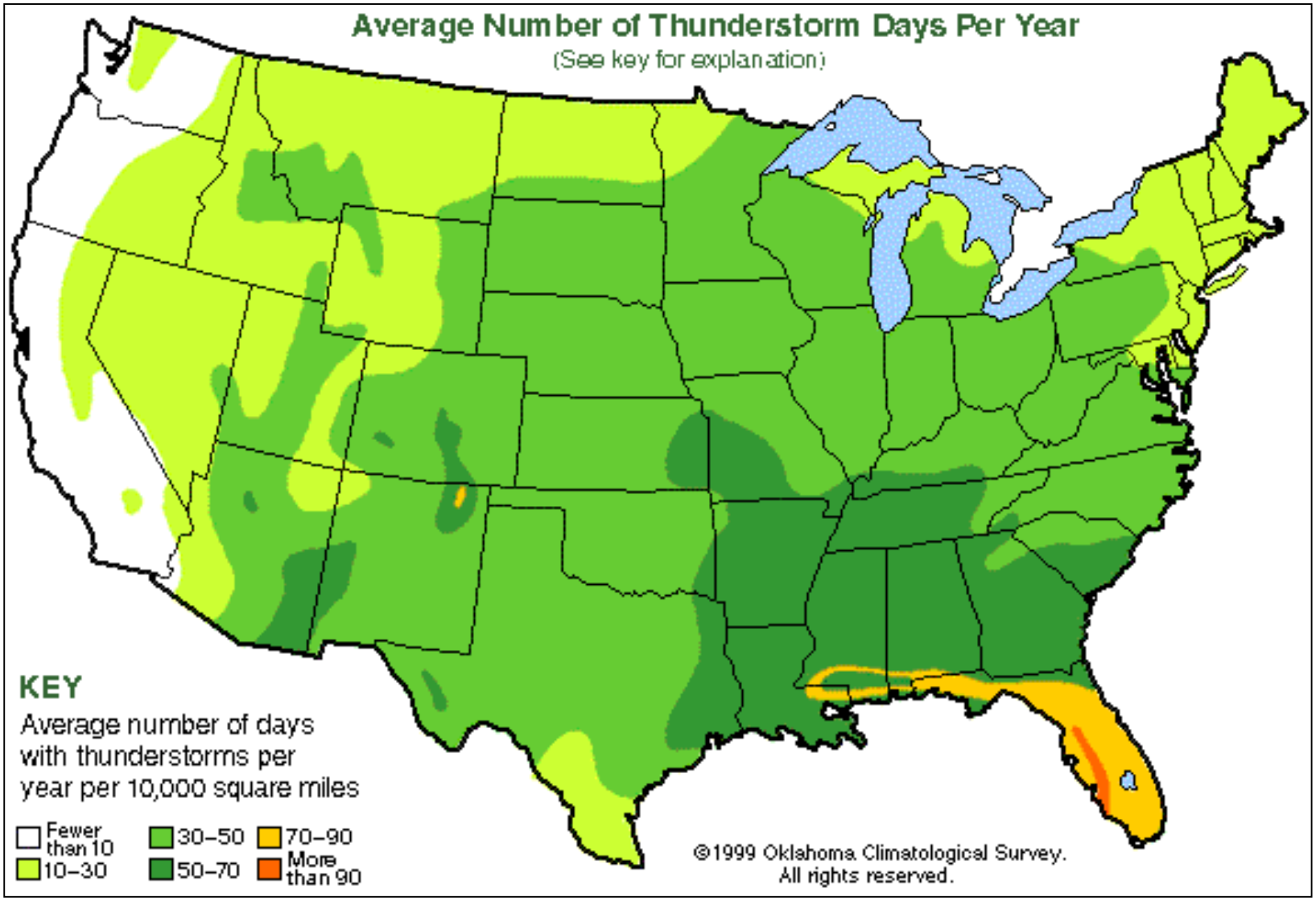

Figure 4-21. Average Number of Thunderstorm Days Per Year

Past Occurrences

There have been 338 recorded thunderstorm/high wind events in Davidson County since 1872. These events are presented in Appendix B.

Likelihood of Future Occurrences

Thunderstorms are likely to occur in Nashville-Davidson County approximately 50 to 70 days each year.

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D R A F T

TORNADOES

The National Weather Service defines a tornado as a violently rotating column of air pendant from a thunderstorm cloud that touches the ground. Tornados are generally considered the most destructive of all atmospheric-generated phenomena. An average of 800 touch down annually in the United States. More tornados occur during the months of May and June than in other months. Additionally, over 30 percent of recorded tornado activity has occurred between the hours of 3:00 pm and 6:00 pm, and an additional estimated 25 percent has occurred between 6:00 pm and 9:00 pm. Thus, over half of all tornadoes occur between 3:00 and 9:00 pm.

Tornados follow the path of least resistance. Therefore, valleys and flatter land areas are most susceptible to them. The typical tornado path is 16 miles long with a width of less than one-quarter mile. Tornadoes have resulted in some of the greatest losses to life of any natural hazard, with the mean national death toll being between 80 and 100 persons every year.

Tornados are classified using the tornado scale developed by Dr. Theodore Fujita. The Fujita Tornado Scale assigns a category to tornados based on their wind speeds and relates this to the general type of damage that is expected. Ratings range from F0 (light damage), to F5 (total destruction). The scale is presented in Table 4-23. Approximately ninety percent of tornados nationwide recorded between 1956 and 2001 were F2, F1, and F0 tornados. Most of these (68 percent of all tornados) were F1 and F0 tornados.

Table 4-23. Fujita Tornado Scale

SCALE VALUE	WIND SPEED RANGE (MPH)	TYPE OF DAMAGE
F0	40-72	*Light* – May be some damage to poorly maintained roofs. Unsecured lightweight objects, such as trash cans, are displaced.
F1	73-112	*Moderate* – Minor damage to roofs occurs, and windows are broken. Larger heavier objects become displaced. Minor damage to trees and landscaping can be observed.
F2	113-157	*Considerable* – Roofs are damaged. Manufactured homes, on nonpermanent foundations, can be shifted off their foundations. Trees and landscaping either snap or are blown over. Medium-sized debris becomes airborne, damaging other structures.
F3	158-206	*Severe* – Roofs and some walls, especially unreinforced masonry, are torn from structures. Small ancillary buildings are often destroyed. Manufactured homes on nonpermanent foundations can be overturned. Some trees are uprooted.
F4	207-260	*Devastating* - Well constructed homes, as well as manufactured homes, are destroyed. Some structures are lifted off their foundations. Automobile-sized debris is displaced and often tumbles. Trees are often uprooted and blow over.
F5	261-318	*Incredible* – Strong frame houses and engineered buildings are lifted from their foundations or are significantly damaged or destroyed. Automobile-sized debris is moved significant distances. Trees are uprooted and splintered.

Past Occurrences

Several severe tornadoes have passed through Nashville, damaging property and taking lives in many of those instances. The tornado that occurred on April 16, 1998 caused the most damage ever in Davidson County because its path was through downtown Nashville. As a result, 35 buildings in downtown Nashville were "red tagged", meaning they were rendered structurally unsound. The tornado continued east and hit the residential section of East Nashville where at least 300 homes were damaged. Over a thousand trees, were blown down at Andrew Jackson's home, The Hermitage. Some of the trees were well over 200 years old, and a few of the trees that were destroyed were planted by Andrew Jackson himself. Nashville Electric Service reported that 75,000 customers were without power. These events are presented in Appendix B.

Figure 4-22. Tornado Damage

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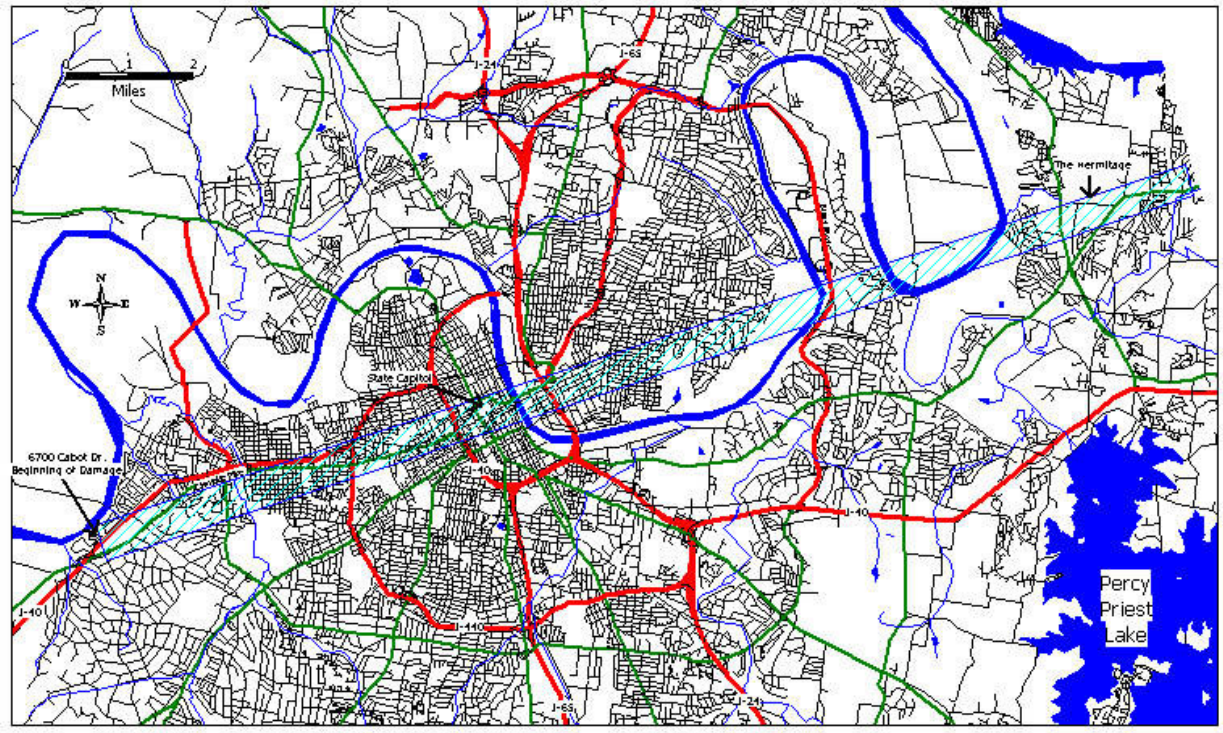

Figure 4-23. Footprint of April 16, 1998 Tornado

Likelihood of Future Occurrences

Based on NOAA, Storm Prediction Center Statistics, Nashville is located in an area of High Risk for tornadoes.

WINTER STORMS

Winter storms are especially hazardous in terms of closing emergency routes, creating power and utility system failures, and immobilizing economic activity. Commuters may become stranded, airports may close, and emergency and medical services may be disrupted. Accumulations of snow and ice can cause roofs to collapse and knock down trees and power lines. Ice can disrupt communications and power for days while utility companies repair extensive damage. Even small accumulations of ice can be extremely dangerous to motorists and pedestrians. Bridges and overpasses freeze before other surfaces and are particularly dangerous.

The types of winter precipitation which may occur in Davidson County includes:

- **Snow Flurries** -- Light snow falling for short durations, resulting in a light dusting or no accumulation.
- **Snow Showers** -- Snow falling at varying intensities for brief periods of time. Some accumulation possible.
- **Blowing Snow** -- Wind-driven snow that reduces visibility and causes drifting. May be falling snow or loose snow picked up off the ground by the wind.
- **Blizzard** -- Winds of more than 35 miles per hour with snow and blowing snow reducing visibility to near zero.
- **Sleet** -- Forms from rain drops that freeze into ice pellets before reaching the ground. Sleet usually bounces when hitting a surface and does not stick. It can, however, accumulate and make driving treacherous. Typically occurs at temperatures from 30 to 31 degrees on the ground and 32 to 34 degrees in the clouds.
- **Freezing Rain** -- Falls onto a surface with a temperature below freezing, causing it to freeze to surfaces such as trees, cars and roads and form a coating of ice. Can be very hazardous even in small accumulations. Typically occurs at temperatures from 30 to 33 degrees on the ground and 34 to 36 degrees in the clouds.

The average monthly snowfall for the Nashville-Davidson County area is presented in the table below.

Table 4-24. Snowfall Summary (inches)
1948-2003 Southeast Regional Climate Center

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Nashville International Airport	3.9	3.2	1.5	---	---	---	---	---	---	---	0.5	1.2	10.3
Old Hickory Dam	1.2	0.8	---	---	---	---	---	---	---	---	---	0.4	2.4

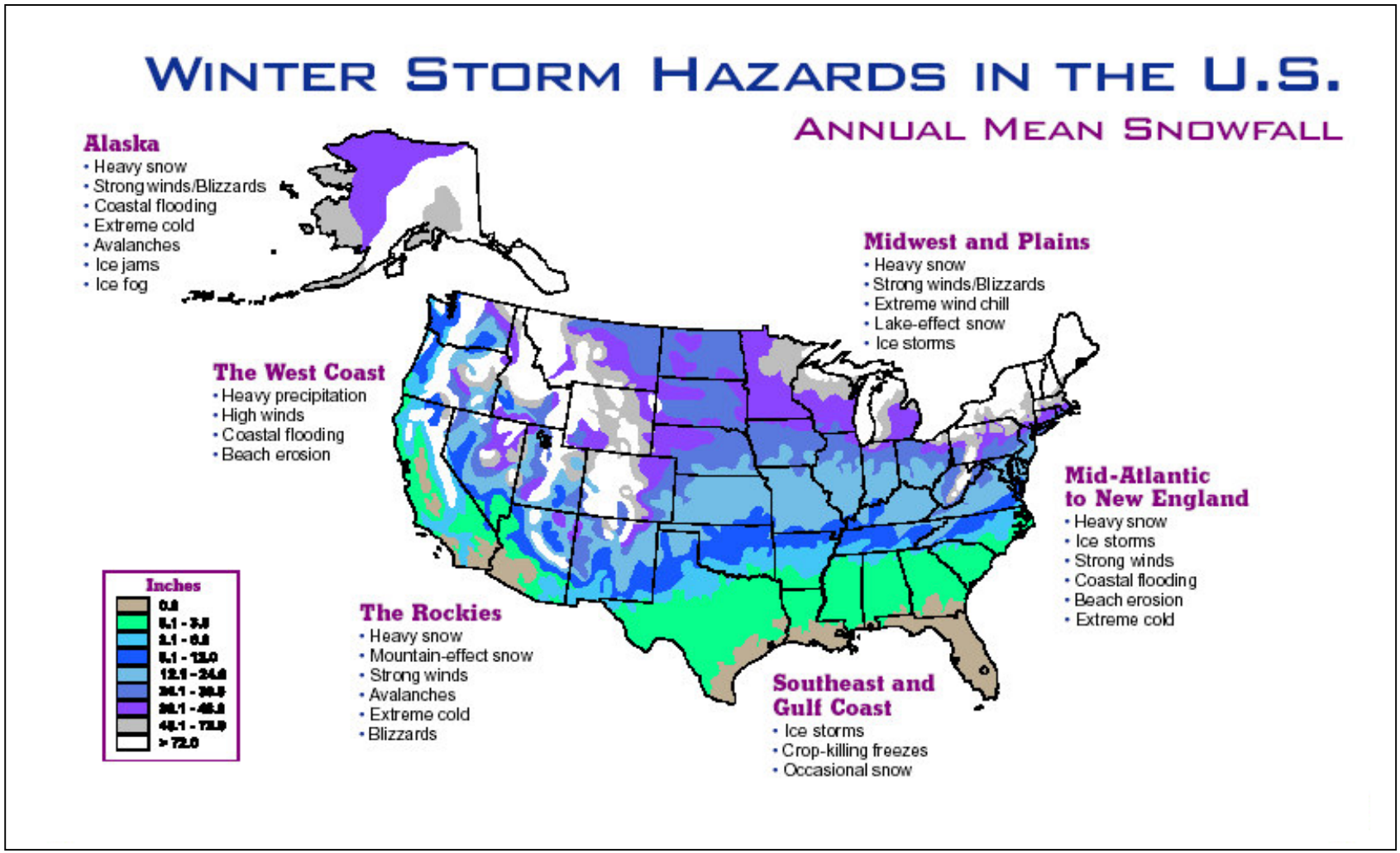

Figure 4-24. Annual Mean Snowfall

Past Occurrences

There have been 164 recorded winter storm events in Davidson County since 1779. These events are presented in Appendix B.

Likelihood of Future Occurrences

Nashville and Davidson County may anticipate 6 to 12 inches of snowfall annually.

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